

REMARKS

In an Office Action dated April 13, 2011, claims 1-12 were rejected. Herein, claims 1, 4-6, 9, and 11 have been amended. No new matter has been added. Additionally, claims 2, 3, 7, 8, and 10 have been cancelled without prejudice or disclaimer to the subject matter therein. Applicant respectfully requests further examination and reconsideration in view of the following remarks.

Minor editorial amendments have been made to the specification and abstract. No new matter has been added.

I. Support for Amendment

Applicant notes that support for the amendments to the claims can be found at least (i) from line 27 of page 10 to line 24 of page 13 of the specification as originally filed and (ii) in FIGs. 2(a) and 2(b). However, Applicant notes that the above-noted references to the specification and drawings are not intended to limit the presently claimed invention to any single embodiment and are provided for illustrative purposes only.

II. Claim Rejections under 35 U.S.C. 102

Claims 1-3 and 9-11 were under 35 U.S.C. 102(b) as being anticipated over Wise et al. (US 2003/0156652, hereafter "Wise"). As noted above, claims 2, 3, and 10 have been cancelled without prejudice or disclaimer to subject matter therein. Additionally, it is noted that claim 1 has been amended to incorporate the subject matter of cancelled claims 2 and 3, and claim 9 has been amended to incorporate the subject matter of cancelled claim 10. Applicant respectfully requests reconsideration of the above-noted rejection in view of the following.

Claim 1 recites:

(A) an image data-decoding unit operable to allow input encoded data fed into an image data-processing apparatus to be decoded through pipeline processing;

(B) that a series of decoding processes are divided into a plurality of process stages; and

(C) that the image data-decoding unit includes a plurality of data processing units, each of the plurality of data processing units performing, independently from the other plurality of

data processing units, a process on a corresponding stage, from among the plurality of process stages, for a unit of a macro block, thereby practicing pipeline processing.

Applicant respectfully submits that the above-noted features of claim 1 are not disclosed, suggested, or otherwise rendered obvious by Wise based on the following.

Wise is directed to a pipeline video decoder employing a plurality of interconnected stages to decode and decompress a single bit stream (Abstract). Wise teaches that control of the plurality of interconnected stages is performed using universal adaptation units (i.e., “tokens”) for interfacing with (i) all of plurality of interconnected stages or (ii) selected stages from among the plurality of interconnected stages ([0036]). However, Applicant respectfully submits that Wise fails to provide any disclosure that each of the plurality of interconnected stages performs processing independently of the other plurality of interconnected stages, as required by claim 1.

Further, paragraphs [0036]-[0042] of Wise teach that the universal adaptation units are made up a system of “tokens” for controlling the plurality of interconnected stages in the pipeline, and that the system of tokens includes (i) DATA tokens providing data to the processing stages in the pipeline, (ii) control tokens providing conditioning (i.e., reconfiguration) to the interconnected stages in the pipeline, (iii) tokens that provide both data and conditioning to the interconnected stages in the pipeline, and (iv) tokens to identify coding standard to the interconnected stages in the pipeline. Wise teaches that by using the system of “tokens” to simultaneously provide data to and adaptively reconfigure the interconnected stages in the pipeline, the pipeline processing of Wise is able to provide greater “functional diversity” of the interconnected stages using the interactive flexibility of the token system.

In other words, each of the plurality of interconnected stages in the pipeline of Wise are reconfigurable to provide full flexibility in order to perform processing for an arbitrary data format. As such, the disclosure of Wise describing/illustrating the operation of the pipeline (e.g., paragraphs [0036]-[0042], and FIGs. 1, 2(a), 2(b), and like) do not specify a unit of data for which the processing is performed. Accordingly, Wise necessarily fails to teach that each of the interconnected stages in the pipeline performs processing for a unit of a macroblock.

In contrast, claim 1 requires that each of a plurality of data processing units perform, independently from the other plurality of data processing units, processing on a corresponding process stage, from among plurality of process stages that make up a series of decoding processes, for a unit of a macro block.

In particular, claim 1 recites (A) an image data-decoding unit operable to allow input encoded data fed into an image data-processing apparatus to be decoded through pipeline processing; (B) that a series of decoding processes are divided into a plurality of process stages; and (C) that the image data-decoding unit includes a plurality of data processing units, each of the plurality of data processing units performing, independently from the other plurality of data processing units, a process on a corresponding stage, from among the plurality of process stages, for a unit of a macro block, thereby practicing pipeline processing.

In view of the above, Applicant respectfully submits that Wise fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 1. Therefore, claim 1 is patentable over Wise.

Additionally, Applicant notes that by providing the above-noted features of claim 1, the presently claimed invention is able to provide the advantageous effect of enabling effective pipeline control for each of a plurality of process stages that operate for a unit of a macro block. By failing to provide the above-noted features of claim 1, it is noted that Wise is unable to achieve the advantageous effects of the presently claimed invention.

Claim 9 recites: (A) dividing a series of processes for processing image data into a plurality of process stages; and (B) that the processing the image data includes a plurality of data processes, each of the plurality of data processes performing, independently of the other plurality of data processes, a process on a corresponding stage, from among the plurality of process stages, for a unit of a macro block. Applicant respectfully submits that Wise fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 9 for reasons similar to those discussed above with respect to claim 1. Therefore, claim 9 is patentable over Wise.

Claim 11 is patentable over Wise based at least on its dependency from claim 9.

III. Claim Rejections under 35 U.S.C. 103

2. Claim 6

Claims 6 and 7 were under 35 U.S.C. 102(b) as being anticipated over Gonzales et al. (US 5,289,577, hereafter “Gonzalez”). As noted above, claim 7 has been cancelled without prejudice or disclaimer to the subject matter therein. Additionally, Applicant notes that pending claim 6 has been amended to incorporate the subject matter of cancelled claims 7 and 8. Claim 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzales in view of Wise.

In order to expedite prosecution of the present application, Applicant respectfully submits that claim 6 is patentable over any combination of Gonzales and Wise based on the following.

Claim 6 recites:

(A) an image data-encoding unit operable to allow input image data fed into an image data-processing apparatus to be encoded through pipeline processing;

(B) that a series of encoding processes are divided into a plurality of process stages; and

(C) that the image data-encoding unit includes a plurality of data processing units, each of the plurality of data processing units performing, independently from the other plurality of data processing units, a process on a corresponding stage, from among the plurality of process stages, for a unit of a macro block.

Applicant respectfully submits that the above-noted features of claim 6 are not disclosed, suggested, or otherwise rendered obvious by any combination of Gonzalez and Wise based on the following.

Gonzalez is directed to an image processing system having a multi-stage sequential process pipeline (FIG. 1). Gonzalez teaches that control logic may divide the tasks required for encoding of image data such that partitioned tasks are assigned to a corresponding stage in the sequential process pipeline (Col. 9, Line 55 - Col. 10, Line 11). However, Applicant respectfully submits that Gonzalez fails to provide any disclosure that (i) each of the stages in the sequential process pipeline performs processing of its assigned task independently of the other stages in the

sequential process pipeline, and (ii) each of the stages in the sequential process pipeline performs processing for a unit of a macroblock.

As noted above, Wise is directed to a pipeline video decoder employing a plurality of interconnected stages to decode and decompress a single bit stream having an arbitrary format (Abstract). However, for reasons similar to those described above with respect to the rejection of claim 1, Applicant respectfully submits that Wise fails to provide disclosure that an encoding process is divided into a plurality of process stages such that each of a plurality of data processing units perform, independently from the other plurality of data processing units, processing on a corresponding process stage, from among plurality of process stages that make up the encoding process, for a unit of a macro block.

In contrast to Gonzalez and Wise, claim 6 requires that each of a plurality of data processing units perform, independently from the other plurality of data processing units, processing on a corresponding process stage, from among plurality of process stages that make up a series of encoding processes, for a unit of a macro block.

In particular, claim 6 recites (A) an image data-encoding unit operable to allow input image data fed into an image data-processing apparatus to be encoded through pipeline processing; (B) that a series of encoding processes are divided into a plurality of process stages; and (C) that the image data-encoding unit includes a plurality of data processing units, each of the plurality of data processing units performing, independently from the other plurality of data processing units, a process on a corresponding stage, from among the plurality of process stages, for a unit of a macro block.

In view of the above, Applicant respectfully submits that any combination of Gonzalez and Wise fails to disclose, suggest, or otherwise render obvious the above-noted features of claim 6. Therefore, claim 6 is patentable over any combination of Gonzalez and Wise.

Additionally, Applicant notes that by providing the above-noted features of claim 6, the presently claimed invention is able to provide the advantageous effect of enabling effective

pipeline control for each of a plurality of process stages that operate for a unit of a macro block. By failing to provide the above-noted features of claim 6, it is noted that an combination of Gonzalez and Wise is unable to achieve the advantageous effects of the presently claimed invention.

3. Claims 4, 5, and 12

Claims 4, 5, and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wise in view of Lee (US 2003/0117585). Applicant respectfully submits that Lee fails to provide disclosure that would obviate the above-mentioned deficiencies of Wise. Accordingly, claims 4 and 5 are patentable over and combination of Wise and Lee based at least on their dependency from claim 1, and claim 12 is patentable over any combination of Wise and Lee based at least on its dependency from claim 9.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1, 4-6, 9, 11, and 12 are clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner believes that there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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